SOUTHWEST FISHERIES SCIENCE CENTER
THIRD QUARTER REPORT-FY 2001
For the Period April 1, 2001-June 30, 2001

SUBMITTED BY: Lab Director/Division Director: John Hunter, Division Director, Fisheries Resources Division

Title of Accomplishment: Paper describing Pacific sardine spawning habitat

Current Status: Study completed. Manuscript submitted to Fisheries Oceanography.

Background Information: ADCP acoustic backscatter provides an underway method to estimate forage availability for spawning sardine and, hence, aids in defining spawning habitat.

Purpose of Activity: To define the physical and biological characteristics of the Pacific sardine spawning habitat off California based upon recent spring egg and larval surveys.

Description of Accomplishment and Significant Results: Sardine spawning, as evidenced by the presence of sardine eggs, shows a strong spatial association to distributional patterns of SST and zooplankton. The underway record of ADCP acoustic backscatter provides a high-resolution method of defining zooplankton distribution that matches the results of the Continuous Underway Fish Egg Sampler. A sharp offshore decrease in backscatter (and hence zooplankton) in the midst of the California Current is coincident with the offshore limit of sardine spawning demonstrating the importance of zooplankton to spawning habitat. Spawning sardine either favor or require the high concentrations of zooplankton (forage) found in the coastal transitional waters. The low SST's of the extremely cold upwelled waters create the shoreward boundary of sardine spawning. The development of the very strong El Niño, the rapid transition to strong La Niña conditions in 1998-99, had a large impact on the physical and biological environment of the California Current System. The resulting large interannual differences were clearly reflected in the distribution of sardine spawning further aiding in the conclusions of the study. The operation of the ADCP is a standard procedure requiring little, if any, attention and therefore is an effective and efficient addition to monitoring the large interannual differences in the development of spawning habitat.

Significance of Accomplishment: Fishery managers must note that the distribution and abundance of various marine populations off California are largely impacted by interannual physical and biological conditions. This study demonstrates a new survey methodology to assist in the general interpretation of biological conditions and its application to sardine spawning.

Problems: None.

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